

SEQUENCE LISTING

<110> Lambeth, J. David

Cheng, Guangjie

McCoy, James

<120> Methods and Transgenic Mouse Model for Identifying and Modulating Factors Involved in the Production of Reactive Oxygen Intermediates

<130> 05501-0211 (43150-286808)

<150> US 60/395,498

<151> 2002-07-12

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<170> PatentIn version 3.1

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Arg Tyr Ala Glu Trp Gln Thr Val Ala Gln Cys Pro Val Pro Gln Phe			
245	250	255	260
tct ggc aag gaa ccc tcg gct tgg aaa tgg att tta ggc cct gtg gtc			931
Ser Gly Lys Glu Pro Ser Ala Trp Lys Trp Ile Leu Gly Pro Val Val			
265	270	275	
ttg tat gca tgt gaa aga ata att agg ttc tgg cga ttt caa caa gaa			979
Leu Tyr Ala Cys Glu Arg Ile Ile Arg Phe Trp Arg Phe Gln Gln Glu			
280	285	290	
gtt gtc att acc aag gtg gta agc cac ccc tct gga gtc ctg gaa ctt			1027
Val Val Ile Thr Lys Val Val Ser His Pro Ser Gly Val Leu Glu Leu			
295	300	305	
cac atg aaa aag cgt ggc ttt aaa atg gcg cca ggg cag tac atc ttg			1075
His Met Lys Lys Arg Gly Phe Lys Met Ala Pro Gly Gln Tyr Ile Leu			
310	315	320	
gtg cag tgc cca gcc ata tct tcg ctg gag tgg cac ccc ttc acc ctt			1123
Val Gln Cys Pro Ala Ile Ser Ser Leu Glu Trp His Pro Phe Thr Leu			
325	330	335	340
acc tct gcc ccc cag gaa gac ttt ttc agc gtg cac atc cgg gca gca			1171
Thr Ser Ala Pro Gln Glu Asp Phe Phe Ser Val His Ile Arg Ala Ala			
345	350	355	
gga gac tgg aca gca gcg cta ctg gag gcc ttt ggg gca gag gga cag			1219
Gly Asp Trp Thr Ala Ala Leu Leu Glu Ala Phe Gly Ala Glu Gly Gln			
360	365	370	
gcc ctc cag gag ccc tgg agc ctg cca agg ctg gca gtg gac ggg ccc			1267
Ala Leu Gln Glu Pro Trp Ser Leu Pro Arg Leu Ala Val Asp Gly Pro			
375	380	385	

ttt gga act gcc ctg aca gat gta ttt cac tac cca gtg tgc tgc	1315
Phe Gly Thr Ala Leu Thr Asp Val Phe His Tyr Pro Val Cys Val Cys	
390 395 400	
gtt gcc gcg ggg atc gga gtc act ccc ttc gct gct ctt ctg aaa tct	1363
Val Ala Ala Gly Ile Gly Val Thr Pro Phe Ala Ala Leu Leu Lys Ser	
405 410 415 420	
ata tgg tac aaa tgc agt gag gca cag acc cca ctg aag ctg agc aag	1411
Ile Trp Tyr Lys Cys Ser Glu Ala Gln Thr Pro Leu Lys Leu Ser Lys	
425 430 435	
gtg tat ttc tac tgg att tgc cgg gat gca aga gct ttt gag tgg ttt	1459
Val Tyr Phe Tyr Trp Ile Cys Arg Asp Ala Arg Ala Phe Glu Trp Phe	
440 445 450	
gct gat ctc tta ctc tcc ctg gaa aca cgg atg agt gag cag ggg aaa	1507
Ala Asp Leu Leu Ser Leu Glu Thr Arg Met Ser Glu Gln Gly Lys	
455 460 465	
act cac ttt ctg agt tat cat ata ttt ctt acc ggc tgg gat gaa aat	1555
Thr His Phe Leu Ser Tyr His Ile Phe Leu Thr Gly Trp Asp Glu Asn	
470 475 480	
cag gct ctt cac ata gct tta cac tgg gac gaa aat act gac gtg att	1603
Gln Ala Leu His Ile Ala Leu His Trp Asp Glu Asn Thr Asp Val Ile	
485 490 495 500	
aca ggc tta aag cag aag acc ttc tat ggg agg ccc aac tgg aac aat	1651
Thr Gly Leu Lys Gln Lys Thr Phe Tyr Gly Arg Pro Asn Trp Asn Asn	
505 510 515	
gag ttc aag cag att gcc tac aat cac ccc agc agc agt att ggc gtg	1699
Glu Phe Lys Gln Ile Ala Tyr Asn His Pro Ser Ser Ser Ile Gly Val	
520 525 530	
ttc ttc tgt gga cct aaa gct ctc tcg agg aca ctt caa aag atg tgc	1747
Phe Phe Cys Gly Pro Lys Ala Leu Ser Arg Thr Leu Gln Lys Met Cys	
535 540 545	
cac ttg tat tca tca gct gac ccc aga ggt gtt cat ttc tat tac aac	1795
His Leu Tyr Ser Ser Ala Asp Pro Arg Gly Val His Phe Tyr Tyr Asn	
550 555 560	
aag gag agc ttc tag actttggagg tcaagtccag gcattgtgtt ttcaatcaag	1850
Lys Glu Ser Phe	
565	
ttattgattc caaagaactc caccaggaat tcctgtgacg gcctgttgat atgagctccc	1910
agttggaaac tggtgaataa taattaacta ttgtgaacag tacactatac catacttcct	1970
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2044

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<211> 568

<212> PRT

<213> Homo sapiens

<400> 6

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Leu	Ser	Trp	Leu	Gly	Ile	Asn	Phe	Tyr	Leu	Phe	Ile	Asp	Thr	Phe	Tyr
					20				25				30		

Trp	Tyr	Glu	Glu	Glu	Ser	Phe	His	Tyr	Thr	Arg	Val	Ile	Leu	Gly
					35				40			45		

Ser	Thr	Leu	Ala	Trp	Ala	Arg	Ala	Ser	Ala	Leu	Cys	Leu	Asn	Phe	Asn
					50				55			60			

Cys	Met	Leu	Ile	Leu	Ile	Pro	Val	Ser	Arg	Asn	Leu	Ile	Ser	Phe	Ile
					65				70			75			80

Arg	Gly	Thr	Ser	Ile	Cys	Cys	Arg	Gly	Pro	Trp	Arg	Arg	Gln	Leu	Asp
					85				90			95			

Lys	Asn	Leu	Arg	Phe	His	Lys	Leu	Val	Ala	Tyr	Gly	Ile	Ala	Val	Asn
					100				105			110			

Ala	Thr	Ile	His	Ile	Val	Ala	His	Phe	Phe	Asn	Leu	Glu	Arg	Tyr	His
					115				120			125			

Trp	Ser	Gln	Ser	Glu	Glu	Ala	Gln	Gly	Leu	Leu	Ala	Ala	Leu	Ser	Lys
						130			135				140		

Leu	Gly	Asn	Thr	Pro	Asn	Glu	Ser	Tyr	Leu	Asn	Pro	Val	Arg	Thr	Phe
					145				150			155			160

Pro Thr Asn Thr Thr Glu Leu Leu Arg Thr Ile Ala Gly Val Thr
 165 170 175

Gly Leu Val Ile Ser Leu Ala Leu Val Leu Ile Met Thr Ser Ser Thr
 180 185 190

Glu Phe Ile Arg Gln Ala Ser Tyr Glu Leu Phe Trp Tyr Thr His His
 195 200 205

Val Phe Ile Val Phe Phe Leu Ser Leu Ala Ile His Gly Thr Gly Arg
 210 215 220

Ile Val Arg Gly Gln Thr Gln Asp Ser Leu Ser Leu His Asn Ile Thr
 225 230 235 240

Phe Cys Arg Asp Arg Tyr Ala Glu Trp Gln Thr Val Ala Gln Cys Pro
 245 250 255

Val Pro Gln Phe Ser Gly Lys Glu Pro Ser Ala Trp Lys Trp Ile Leu
 260 265 270

Gly Pro Val Val Leu Tyr Ala Cys Glu Arg Ile Ile Arg Phe Trp Arg
 275 280 285

Phe Gln Gln Glu Val Val Ile Thr Lys Val Val Ser His Pro Ser Gly
 290 295 300

Val Leu Glu Leu His Met Lys Lys Arg Gly Phe Lys Met Ala Pro Gly
 305 310 315 320

Gln Tyr Ile Leu Val Gln Cys Pro Ala Ile Ser Ser Leu Glu Trp His
 325 330 335

Pro Phe Thr Leu Thr Ser Ala Pro Gln Glu Asp Phe Phe Ser Val His
 340 345 350

Ile Arg Ala Ala Gly Asp Trp Thr Ala Ala Leu Leu Glu Ala Phe Gly
 355 360 365

Ala Glu Gly Gln Ala Leu Gln Glu Pro Trp Ser Leu Pro Arg Leu Ala
 370 375 380

Val Asp Gly Pro Phe Gly Thr Ala Leu Thr Asp Val Phe His Tyr Pro
 385 390 395 400

Val Cys Val Cys Val Ala Ala Gly Ile Gly Val Thr Pro Phe Ala Ala
 405 410 415

Leu Leu Lys Ser Ile Trp Tyr Lys Cys Ser Glu Ala Gln Thr Pro Leu
 420 425 430

Lys Leu Ser Lys Val Tyr Phe Tyr Trp Ile Cys Arg Asp Ala Arg Ala
 435 440 445

Phe Glu Trp Phe Ala Asp Leu Leu Ser Leu Glu Thr Arg Met Ser
 450 455 460

Glu Gln Gly Lys Thr His Phe Leu Ser Tyr His Ile Phe Leu Thr Gly
 465 470 475 480

Trp Asp Glu Asn Gln Ala Leu His Ile Ala Leu His Trp Asp Glu Asn
 485 490 495

Thr Asp Val Ile Thr Gly Leu Lys Gln Lys Thr Phe Tyr Gly Arg Pro
 500 505 510

Asn Trp Asn Asn Glu Phe Lys Gln Ile Ala Tyr Asn His Pro Ser Ser
 515 520 525

Ser Ile Gly Val Phe Phe Cys Gly Pro Lys Ala Leu Ser Arg Thr Leu
 530 535 540

Gln Lys Met Cys His Leu Tyr Ser Ser Ala Asp Pro Arg Gly Val His
 545 550 555 560

Phe Tyr Tyr Asn Lys Glu Ser Phe
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<211> 2232

<212> DNA

<213> Homo sapiens

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<221> CDS

<222> (87)..(1823)

<223>

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Met Ala Val Ser Trp Arg Ser Trp Leu
1 5gcc aac gaa ggg gtt aaa cac ctc tgc ctg ttgc atc tgg ctc tcc atg 161
Ala Asn Glu Gly Val Lys His Leu Cys Leu Phe Ile Trp Leu Ser Met
10 15 20 25aat gtc ctg ctt ttc tgg aaa acc ttc ttgc ctg tat aac caa ggg cca 209
Asn Val Leu Leu Phe Trp Lys Thr Phe Leu Leu Tyr Asn Gln Gly Pro
30 35 40gag tat cac tac ctc cac cag atg ttgc ggg ctat gga ttgc tgc tct agc 257
Glu Tyr His Tyr Leu His Gln Met Leu Gly Leu Gly Leu Cys Leu Ser
45 50 55aga gcc tca gca tct gtt ctt aac ctc aac tgc agc ctt atc ctt tta 305
Arg Ala Ser Ala Ser Val Leu Asn Leu Asn Cys Ser Leu Ile Leu Leu
60 65 70ccc atg tgc cga aca ctc ttgc gct tac ctc cga gga tca cag aag gtt 353
Pro Met Cys Arg Thr Leu Leu Ala Tyr Leu Arg Gly Ser Gln Lys Val
75 80 85cca agc agg aga acc agg aga ttgc ttgc gat aaa agc aga aca ttc cat 401
Pro Ser Arg Arg Thr Arg Arg Leu Leu Asp Lys Ser Arg Thr Phe His
90 95 100 105att acc ttgc ggt gtt act atc ttgc att ttc tca ggc gtgc cat gtgc gct 449
Ile Thr Cys Gly Val Thr Ile Cys Ile Phe Ser Gly Val His Val Ala
110 115 120

gcc cat ctg gtgc aat gcc ctc aac ttc tca gtgc aat tac agt gaa gac 497

Ala His Leu Val Asn Ala Leu Asn Phe Ser Val Asn Tyr Ser Glu Asp	125	130	135	
Phe Val Glu Leu Asn Ala Ala Arg Tyr Arg Asp Glu Asp Pro Arg Lys	140	145	150	545
ctt ctc ttc aca act gtt cct ggc ctg aca ggg gtc tgc atg gtg gtg	155	160	165	593
Leu Leu Phe Thr Thr Val Pro Gly Leu Thr Gly Val Cys Met Val Val				
gtg cta ttc ctc atg atc aca gcc tct aca tat gca ata aga gtt tct	170	175	180	641
Val Leu Phe Leu Met Ile Thr Ala Ser Thr Tyr Ala Ile Arg Val Ser				
aac tat gat atc ttc tgg tat act cat aac ctc ttc ttt gtc ttc tac	190	195	200	689
Asn Tyr Asp Ile Phe Trp Tyr Thr His Asn Leu Phe Phe Val Phe Tyr				
atg ctg ctg acg ttg cat gtt tca gga ggg ctg ctg aag tat caa act	205	210	215	737
Met Leu Leu Thr Leu His Val Ser Gly Gly Leu Leu Lys Tyr Gln Thr				
aat tta gat acc cac cct ccc ggc tgc atc agt ctt aac cga acc agc	220	225	230	785
Asn Leu Asp Thr His Pro Pro Gly Cys Ile Ser Leu Asn Arg Thr Ser				
tct cag aat att tcc tta cca gag tat ttc tca gaa cat ttt cat gaa	235	240	245	833
Ser Gln Asn Ile Ser Leu Pro Glu Tyr Phe Ser Glu His Phe His Glu				
cct ttc cct gaa gga ttt tca aaa ccg gca gag ttt acc cag cac aaa	250	255	260	881
Pro Phe Pro Glu Gly Phe Ser Lys Pro Ala Glu Phe Thr Gln His Lys				
ttt gtg aag att tgt atg gaa gag ccc aga ttc caa gct aat ttt cca	270	275	280	929
Phe Val Lys Ile Cys Met Glu Glu Pro Arg Phe Gln Ala Asn Phe Pro				
cag act tgg ctt tgg att tct gga cct ttg tgc ctg tac tgt gcc gaa	285	290	295	977
Gln Thr Trp Leu Trp Ile Ser Gly Pro Leu Cys Leu Tyr Cys Ala Glu				
aga ctt tac agg tat atc cgg agc aat aag cca gtc acc atc att tcg	300	305	310	1025
Arg Leu Tyr Arg Tyr Ile Arg Ser Asn Lys Pro Val Thr Ile Ile Ser				
gtc ata agt cat ccc tca gat gtc atg gaa atc cga atg gtc aaa gaa	315	320	325	1073
Val Ile Ser His Pro Ser Asp Val Met Glu Ile Arg Met Val Lys Glu				
aat ttt aaa gca aga cct ggt cag tat att act cta cat tgt ccc agt	330	335	340	1121
Asn Phe Lys Ala Arg Pro Gly Gln Tyr Ile Thr Leu His Cys Pro Ser				

gta tct gca tta gaa aat cat cca ttt acc ctc aca atg tgt cca act	1169
Val Ser Ala Leu Glu Asn His Pro Phe Thr Leu Thr Met Cys Pro Thr	
350 355 360	
gaa acc aaa gcà aca ttt ggg gtt cat ctt aàa àta gta gga gac tgg	1217
Glu Thr Lys Ala Thr Phe Gly Val His Leu Lys Ile Val Gly Asp Trp	
365 370 375	
aca gaa cga ttt cga gat tta cta ctg cct cca tct agt caa gac tcc	1265
Thr Glu Arg Phe Arg Asp Leu Leu Pro Pro Ser Ser Gln Asp Ser	
380 385 390	
gaa att ctg ccc ttc att caa tct aga aat tat ccc aag ctg tat att	1313
Glu Ile Leu Pro Phe Ile Gln Ser Arg Asn Tyr Pro Lys Leu Tyr Ile	
395 400 405	
gat ggt cct ttt gga agt cca ttt gag gaa tcà ctg aac tat gag gtc	1361
Asp Gly Pro Phe Gly Ser Pro Phe Glu Glu Ser Leu Asn Tyr Glu Val	
410 415 420 425	
agc ctc tgc gtg gct gga ggc att gga gta act cca ttt gca tca ata	1409
Ser Leu Cys Val Ala Gly Gly Ile Gly Val Thr Pro Phe Ala Ser Ile	
430 435 440	
ctc aac acc ctg ttg gat gac tgg aaa cca tac aag ctt aga aga cta	1457
Leu Asn Thr Leu Asp Asp Trp Lys Pro Tyr Lys Leu Arg Arg Leu	
445 450 455	
tac ttt att tgg gta tgc aga gat atc cag tcc ttc cgt tgg ttt gca	1505
Tyr Phe Ile Trp Val Cys Arg Asp Ile Gln Ser Phe Arg Trp Phe Ala	
460 465 470	
gat tta ctc tgt atg ttg cat aac aag ttt tgg caa gag aac aga cct	1553
Asp Leu Leu Cys Met Leu His Asn Lys Phe Trp Gln Glu Asn Arg Pro	
475 480 485	
gac tat gtc aac atc cag ctg tac ctc agt caa aca gat ggg ata cag	1601
Asp Tyr Val Asn Ile Gln Leu Tyr Leu Ser Gln Thr Asp Gly Ile Gln	
490 495 500 505	
aag ata att gga gaa aaa tat cat gca ctg aat tca aga ctg ttt ata	1649
Lys Ile Ile Gly Glu Lys Tyr His Ala Leu Asn Ser Arg Leu Phe Ile	
510 515 520	
gga cgt cct cgq tgg aaa ctt ttg ttt gat gaa ata gca aaa tat aac	1697
Gly Arg Pro Arg Trp Lys Leu Leu Phe Asp Glu Ile Ala Lys Tyr Asn	
525 530 535	
aga gga aaa aca gtt ggt gtt ttc tgt tgg gga ccc aat tca cta tcc	1745
Arg Gly Lys Thr Val Gly Val Phe Cys Cys Gly Pro Asn Ser Leu Ser	
540 545 550	
aag act ctt cat aaa ctg agt aac cag aac aac tca tat ggg aca aga	1793

Lys Thr Leu His Lys Leu Ser Asn Gln Asn Asn Ser Tyr Gly Thr Arg
 555 560 565

ttt gaa tac aat aaa gag tct ttc agc tga aaactttgc catgaagcag 1843
 Phe Glu Tyr Asn Lys Glu Ser Phe Ser
 570 575

gactctaaag aaggaaatgag tgcaatttct aagactttga aactcagcgg aatcaatcg 1903

ctgtgttatg ccaaagaata gtaagggttt cttatattatg attatgtaa aatggaaatg 1963

tgagaatgtg gcaacatgac cgtcacattha catgttaat ctggaaacca aagagaccct 2023

gaagaaatatt tgatgtatg attcatttc agttctcaaa ttaaaagaaa actgttagat 2083

gcacactgtt gatttcatg gtggattcaa gaactccctt gtgaggagct gaacttgctc 2143

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tgaacaaaat taaaaattca ttgaagctg 2232

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<211> 578

<212> PRT

<213> Homö sapiens

<400> 8

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Leu Cys Leu Phe Ile Trp Leu Ser Met Asn Val Leu Leu Phe Trp Lys
 20 25 30

Thr Phe Leu Leu Tyr Asn Gln Gly Pro Glu Tyr His Tyr Leu His Gln
 35 40 45

Met Leu Gly Leu Gly Leu Cys Leu Ser Arg Ala Ser Ala Ser Val Leu
 50 55 60

Asn Leu Asn Cys Ser Leu Ile Leu Leu Pro Met Cys Arg Thr Leu Leu
 65 70 75 80

Ala Tyr Leu Arg Gly Ser Gln Lys Val Pro Ser Arg Arg Thr Arg Arg
 85 90 95

Leu Leu Asp Lys Ser Arg Thr Phe His Ile Thr Cys Gly Val Thr Ile
 100 105 110

Cys Ile Phe Ser Gly Val His Val Ala Ala His Leu Val Asn Ala Leu
 115 120 125

Asn Phe Ser Val Asn Tyr Ser Glu Asp Phe Val Glu Leu Asn Ala Ala
 130 135 140

Arg Tyr Arg Asp Glu Asp Pro Arg Lys Leu Leu Phe Thr Thr Val Pro
 145 150 155 160

Gly Leu Thr Gly Val Cys Met Val Val Val Leu Phe Leu Met Ile Thr
 165 170 175

Ala Ser Thr Tyr Ala Ile Arg Val Ser Asn Tyr Asp Ile Phe Trp Tyr
 180 185 190

Thr His Asn Leu Phe Val Phe Tyr Met Leu Leu Thr Leu His Val
 195 200 205

Ser Gly Gly Leu Leu Lys Tyr Gln Thr Asn Leu Asp Thr His Pro Pro
 210 215 220

Gly Cys Ile Ser Leu Asn Arg Thr Ser Ser Gln Asn Ile Ser Leu Pro
 225 230 235 240

Glu Tyr Phe Ser Glu His Phe His Glu Pro Phe Pro Glu Gly Phe Ser
 245 250 255

Lys Pro Ala Glu Phe Thr Gln His Lys Phe Val Lys Ile Cys Met Glu
 260 265 270

Glu Pro Arg Phe Gln Ala Asn Phe Pro Gln Thr Trp Leu Trp Ile Ser
 275 280 285

Gly Pro Leu Cys Leu Tyr Cys Ala Glu Arg Leu Tyr Arg Tyr Ile Arg
 290 295 300

Ser Asn Lys Pro Val Thr Ile Ile Ser Val Ile Ser His Pro Ser Asp
 305 310 315 320

Val Met Glu Ile Arg Met Val Lys Glu Asn Phe Lys Ala Arg Pro Gly
 325 330 335

Gln Tyr Ile Thr Leu His Cys Pro Ser Val Ser Ala Leu Glu Asn His
 340 345 350

Pro Phe Thr Leu Thr Met Cys Pro Thr Glu Thr Lys Ala Thr Phe Gly
 355 360 365

Val His Leu Lys Ile Val Gly Asp Trp Thr Glu Arg Phe Arg Asp Leu
 370 375 380

Leu Leu Pro Pro Ser Ser Gln Asp Ser Glu Ile Leu Pro Phe Ile Gln
 385 390 395 400

Ser Arg Asn Tyr Pro Lys Leu Tyr Ile Asp Gly Pro Phe Gly Ser Pro
 405 410 415

Phe Glu Glu Ser Leu Asn Tyr Glu Val Ser Leu Cys Val Ala Gly Gly
 420 425 430

Ile Gly Val Thr Pro Phe Ala Ser Ile Leu Asn Thr Leu Leu Asp Asp
 435 440 445

Trp Lys Pro Tyr Lys Leu Arg Arg Leu Tyr Phe Ile Trp Val Cys Arg
 450 455 460

Asp Ile Gln Ser Phe Arg Trp Phe Ala Asp Leu Leu Cys Met Leu His
 465 470 475 480

Asn Lys Phe Trp Gln Glu Asn Arg Pro Asp Tyr Val Asn Ile Gln Leu
 485 490 495

Tyr Leu Ser Gln Thr Asp Gly Ile Gln Lys Ile Ile Gly Glu Lys Tyr
 500 505 510

His Ala Leu Asn Ser Arg Leu Phe Ile Gly Arg Pro Arg Trp Lys Leu
515 520 525

Leu Phe Asp Glu Ile Ala Lys Tyr Asn Arg Gly Lys Thr Val Gly Val
530 535 540

Phe Cys Cys Gly Pro Asn Ser Leu Ser Lys Thr Leu His Lys Leu Ser
545 550 555 560

Asn Gln Asn Asn Ser Tyr Gly Thr Arg Phe Glu Tyr Asn Lys Glu Ser
565 570 575

Phe Ser

<210> 9

<211> 2223

<212> DNA

<213> Homo sapiens.

<220>

<221> CDS

<222> (73)..(1770)

<223>

<400> 9

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ttccccggag tc atg gag aac ctg acc atc agc act gcc cac tgg ctg acg 111
Met Glu Asn Leu Thr Ile Ser Thr Ala His Trp Leu Thr
1 5 10

gcc ccc gcc ccc cgc cca cgc cgc ccg cgc ccg cgc cag ctg acc cgc 159
Ala Pro Ala Pro Arg Pro Arg Pro Arg Arg Pro Arg Gln Leu Thr Arg
15 20 25

gcc tac tgg cac aac cac cgc agc cag ctg ttc tgc ctg gcc acc tat 207
Ala Tyr Trp His Asn His Arg Ser Gln Leu Phe Cys Leu Ala Thr Tyr
30 35 40 45

gca ggc ctc cac gtg ctg ctc ttc ggg ctg gcg gcc agc gcg cac cgg	255
Ala Gly Leu His Val Leu Leu Phe Gly Leu Ala Ala Ser Ala His Arg	
50.. 55 60	
gac ctc ggc gcc agc gtc atg gtg gcc aag ggc tgt ggc cag tgc ctc	303
Asp Leu Gly Ala Ser Val Met Val Ala Lys Gly Cys Gly Gln Cys Leu	
65 70 75	
aac ttc gac tgc agc ttc atc gcg gtg ctg atg ctc aga cgc tgc ctc	351
Asn Phe Asp Cys Ser Phe Ile Ala Val Leu Met Leu Arg Arg Cys Leu	
80 85 90	
acc tgg ctg cgg gcc acg tgg ctg gct caa gtc cta cca ctg gac cag	399
Thr Trp Leu Arg Ala Thr Trp Leu Ala Gln Val Leu Pro Leu Asp Gln	
95 100 105	
aac atc cag ttc cac cag ctt atg ggc tac gtg gta gtg ggg ctg tcc	447
Asn Ile Gln Phe His Gln Leu Met Gly Tyr Val Val Val Gly Leu Ser	
110 115 120 125	
ctc gtg cac act gtg gct cac act gtg aac ttt gta ctc cag gct cag	495
Leu Val His Thr Val Ala His Thr Val Asn Phe Val Leu Gln Ala Gln	
130 135 140	
gcg gag gcc agc cct ttc cag ttc tgg gag ctg ctg ctc acc acg agg	543
Ala Glu Ala Ser Pro Phe Gln Phe Trp Glu Leu Leu Leu Thr Thr Arg	
145 150 155	
cct ggc att ggc tgg gta cac ggt tcg gcc tcc ccc aca ggt gtc gct	591
Pro Gly Ile Gly Trp Val His Gly Ser Ala Ser Pro Thr Gly Val Ala	
160 165 170	
ctg ctg ctg ctc ctc atg ttc atc tgc tcc agt tcc tgc atc	639
Leu Leu Leu Leu Leu Leu Met Phe Ile Cys Ser Ser Ser Cys Ile	
175 180 185	
cgc agg agt ggc cac ttt gag gtg ttc tat tgg act cac ctg tcc tac	687
Arg Arg Ser Gly His Phe Glu Val Phe Tyr Trp Thr His Leu Ser Tyr	
190 195 200 205	
ctc ctc gtg tgg ctt ctg ctc atc ttt cat ggg ccc aac ttc tgg aag	735
Leu Leu Val Trp Leu Leu Ile Phe His Gly Pro Asn Phe Trp Lys	
210 215 220	
tgg ctg ctg gtg cct gga atc ttg ttt ttc ctg gag aag gcc atc gga	783
Trp Leu Leu Val Pro Gly Ile Leu Phe Phe Leu Glu Lys Ala Ile Gly	
225 230 235	
ctg gca gtg tcc cgc atg gca gcc gtg tgc atc atg gaa gtc aac ctc	831
Leu Ala Val Ser Arg Met Ala Ala Val Cys Ile Met Glu Val Asn Leu	
240 245 250	
ctc ccc tcc aag gtc act cat ctc ctc atc aag cgg ccc cct ttt ttt	879

Leu Pro Ser Lys Val Thr His Leu Leu Ile Lys Arg Pro Pro Phe Phe			
255	260	265	
His Tyr Arg Pro Gly Asp Tyr Leu Tyr Leu Asn Ile Pro Thr Ile Ala			
270	275	280	285
cac tat aga cct ggt gac tac ttg tat ctg aac atc ccc acc att gct			927
Arg Tyr Glu Trp His Pro Phe Thr Ile Ser Ser Ala Pro Glu Gln Lys			
290	295	300	
gac tat gag tgg cac ccc ttc acc atc agc agt gct cct gag cag aaa			975
Asp Thr Ile Trp Leu His Ile Arg Ser Gln Gly Gln Trp Thr Asn Arg			
305	310	315	
gac act atc tgg ctg cac att cgg tcc caa ggc cag tgg aca aac agg			1023
Asp Thr Ile Trp Leu His Ile Arg Ser Gln Gly Gln Trp Thr Asn Arg			
320	325	330	
ctg tat gag tcc ttc aag gca tca gac cca ctg ggc cgt ggt tct aag			1071
Leu Tyr Glu Ser Phe Lys Ala Ser Asp Pro Leu Gly Arg Gly Ser Lys			
335	340	345	
agg ctg tcg agg agt gtg aca atg aga aag agt caa agg tcg tcc aag			1119
Arg Leu Ser Arg Ser Val Thr Met Arg Lys Ser Gln Arg Ser Ser Lys			
350	355	360	365
ggc tct gag ata ctt ttg gag aaa cac aaa ttc tgt aac atc aag tgc			1167
Gly Ser Glu Ile Leu Leu Glu Lys His Lys Phe Cys Asn Ile Lys Cys			
370	375	380	385
tac atc gat ggg cct tat ggg acc ccc acc cgc agg atc ttt gcc tct			1215
Tyr Ile Asp Gly Pro Tyr Gly Thr Pro Thr Arg Arg Ile Phe Ala Ser			
385	390	395	
gag cat gcc gtg ctc atc ggg gca ggc atc ggc atc acc ccc ttt gct			1263
Glu His Ala Val Leu Ile Gly Ala Gly Ile Gly Ile Thr Pro Phe Ala			
395	400	405	410
tcc att ctg cag agt atc atg tac agg cac cag aag aag cat act			1311
Ser Ile Leu Gln Ser Ile Met Tyr Arg His Gln Lys Arg Lys His Thr			
410	415	420	425
tgc ccc agc tgc cag cac tcc tgg atc gaa ggt gtc caa gac aac atg			1359
Cys Pro Ser Cys Gln His Ser Trp Ile Glu Gly Val Gln Asp Asn Met			
425	430	435	440
aag ctc cat aag gtg gac ttt atc tgg atc aac aga gac cag cgg tct			1407
Lys Leu His Lys Val Asp Phe Ile Trp Ile Asn Arg Asp Gln Arg Ser			
440	445	450	455
ttc gag tgg ttt gtg agc ctg ctg act aaa ctg gag atg gac cag gcc			1455
Phe Glu Trp Phe Val Ser Leu Leu Thr Lys Leu Glu Met Asp Gln Ala			
455	460	465	
gag gag gct caa tac ggc cgc ttc ctg gag ctg cat atg tac atg aca			1503
Gl Glu Ala Gln Tyr Gly Arg Phe Leu Glu Leu His Met Tyr Met Thr			
465	470	475	

tct gca ctg ggc aag aat gac atg aag gcc att ggc ctg cag atg gcc	1551
Ser Ala Leu Gly Lys Asn Asp Met Lys Ala Ile Gly Leu Gln Met Ala	
480 485 490	
ctt gac ctc ctg gcc aac aag gag aag aaa gac tcc atc acg ggg ctg	1599
Leu Asp Leu Leu Ala Asn Lys Glu Lys Lys Asp Ser Ile Thr Gly Leu	
495 500 505	
cag acg cgc acc cag cct ggg cgg cct gac tgg acg aag gtg ttc cag	1647
Gln Thr Arg Thr Gln Pro Gly Arg Pro Asp Trp Ser Lys Val Phe Gln	
510 515 520 525	
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Lys Val Ala Ala Glu Lys Lys Gly Lys Val Gln Val Phe Phe Cys Gly	
530 535 540	
tcc cca gct ctg gcc aag gtg ctg aag ggc cat tgt gag aag ttc ggc	1743
Ser Pro Ala Leu Ala Lys Val Leu Lys Gly His Cys Glu Lys Phe Gly	
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Phe Arg Phe Phe Gln Glu Asn Phe	
560 565	
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His Asn His Arg Ser Gln Leu Phe Cys Leu Ala Thr Tyr Ala Gly Leu
 35 40 45

His Val Leu Leu Phe Gly Leu Ala Ala Ser Ala His Arg Asp Leu Gly
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Ala Ser Val Met Val Ala Lys Gly Cys Gly Gln Cys Leu Asn Phe Asp
 65 70 75 80

Cys Ser Phe Ile Ala Val Leu Met Leu Arg Arg Cys Leu Thr Trp Leu
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Arg Ala Thr Trp Leu Ala Gln Val Leu Pro Leu Asp Gln Asn Ile Gln
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Phe His Gln Leu Met Gly Tyr Val Val Val Gly Leu Ser Leu Val His
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Thr Val Ala His Thr Val Asn Phe Val Leu Gln Ala Gln Ala Glu Ala
 130 135 140

Ser Pro Phe Gln Phe Trp Glu Leu Leu Leu Thr Thr Arg Pro Gly Ile
 145 150 155 160

Gly Trp Val His Gly Ser Ala Ser Pro Thr Gly Val Ala Leu Leu Leu
 165 170 175

Leu Leu Leu Met Phe Ile Cys Ser Ser Ser Cys Ile Arg Arg Ser
 180 185 190

Gly His Phe Glu Val Phe Tyr Trp Thr His Leu Ser Tyr Leu Leu Val
 195 200 205

Trp Leu Leu Leu Ile Phe His Gly Pro Asn Phe Trp Lys Trp Leu Leu
 210 215 220

Val Pro Gly Ile Leu Phe Phe Leu Glu Lys Ala Ile Gly Leu Ala Val
 225 230 235 240

Ser Arg Met Ala Ala Val Cys Ile Met Glu Val Asn Leu Leu Pro Ser
 245 250 255

Lys Val Thr His Leu Leu Ile Lys Arg Pro Pro Phe Phe His Tyr Arg
 260 265 270

Pro Gly Asp Tyr Leu Tyr Leu Asn Ile Pro Thr Ile Ala Arg Tyr Glu
 275 280 285

Trp His Pro Phe Thr Ile Ser Ser Ala Pro Glu Gln Lys Asp Thr Ile
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Trp Leu His Ile Arg Ser Gln Gly Gln Trp Thr Asn Arg Leu Tyr Glu
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Ser Phe Lys Ala Ser Asp Pro Leu Gly Arg Gly Ser Lys Arg Leu Ser
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Arg Ser Val Thr Met Arg Lys Ser Gln Arg Ser Ser Lys Gly Ser Glu
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Ile Leu Leu Glu Lys His Lys Phe Cys Asn Ile Lys Cys Tyr Ile Asp
 355 360 365

Gly Pro Tyr Gly Thr Pro Thr Arg Arg Ile Phe Ala Ser Glu His Ala
 370 375 380

Val Leu Ile Gly Ala Gly Ile Gly Ile Thr Pro Phe Ala Ser Ile Leu
 385 390 395 400

Gln Ser Ile Met Tyr Arg His Gln Lys Arg Lys His Thr Cys Pro Ser
 405 410 415

Cys Gln His Ser Trp Ile Glu Gly Val Gln Asp Asn Met Lys Leu His
 420 425 430

Lys Val Asp Phe Ile Trp Ile Asn Arg Asp Gln Arg Ser Phe Glu Trp
 435 440 445

Phe Val Ser Leu Leu Thr Lys Leu Glu Met Asp Gln Ala Glu Glu Ala
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Gln Tyr Gly Arg Phe Leu Glu Leu His Met Tyr Met Thr Ser Ala Leu
 465 470 475 480

Gly Lys Asn Asp Met Lys Ala Ile Gly Leu Gln Met Ala Leu Asp Leu
 485 490 495

Leu Ala Asn Lys Glu Lys Asp Ser Ile Thr Gly Leu Gln Thr Arg
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Thr Gln Pro Gly Arg Pro Asp Trp Ser Lys Val Phe Gln Lys Val Ala
 515 520 525

Ala Glu Lys Lys Gly Lys Val Gln Val Phe Phe Cys Gly Ser Pro Ala
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 aaggatcaga ttggagaagt gatttatcta agatcccaca gtggactggc agcagcactg 180
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 ctccattttg ggacattctta atccctgagc ccctattatt ttcatc atg ggc ttc 355
 Met Gly Phe
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 tgc ctg gct cta gca tgg aca ctt ctg gtt ggg gca tgg acc cct ctg 403
 Cys Leu Ala Leu Ala Trp Thr Leu Leu Val Gly Ala Trp Thr Pro Leu
 5 10 15
 gga gct cag aac ccc att tcg tgg gag gtg cag cga ttt gat ggg tgg 451
 Gly Ala Gln Asn Pro Ile Ser Trp Glu Val Gln Arg Phe Asp Gly Trp
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 tac aac aac ctc atg gag cac aga tgg ggc agc aaa ggc tcc cgg ctg 499
 Tyr Asn Asn Leu Met Glu His Arg Trp Gly Ser Lys Gly Ser Arg Leu
 40 45 50
 cag cgc ctg gtc cca gcc agc tat gca gat ggc gtg tac cag ccc ttg 547
 Gln Arg Leu Val Pro Ala Ser Tyr Ala Asp Gly Val Tyr Gln Pro Leu
 55 60 65
 gga gaa ccc cac ctg ccc aac ccc cga gac ctt agc aac acc atc tca 595
 Gly Glu Pro His Leu Pro Asn Pro Arg Asp Leu Ser Asn Thr Ile Ser
 70 75 80
 agg ggc cct gca ggg ctg gcc tcc ctg aga aac cgc aca gtg ttg ggg 643
 Arg Gly Pro Ala Gly Leu Ala Ser Leu Arg Asn Arg Thr Val Leu Gly
 85 90 95
 gtc ttc ttt ggc tat cac gtg ctt tca gac ctg gtg agc gtg gaa act 691
 Val Phe Phe Gly Tyr His Val Leu Ser Asp Leu Val Ser Val Glu Thr
 100 105 110 115
 ccc ggc tgc ccc gcc gag ttc ctc aac att cgc atc ccg ccc gga gac 739
 Pro Gly Cys Pro Ala Glu Phe Leu Asn Ile Arg Ile Pro Pro Gly Asp
 120 125 130
 ccc atg ttc gac ccc gac cag cgc ggg gac gtg gtg ctg ccc ttcc cag 787
 Pro Met Phe Asp Pro Asp Gln Arg Gly Asp Val Val Leu Pro Phe Gln
 135 140 145
 aga agc cgc tgg gac ccc gag acc gga cgg agt ccc agc aat ccc cgg 835

Arg Ser Arg Trp Asp Pro Glu Thr Gly Arg Ser Pro Ser Asn Pro Arg		
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gac ccg gcc aac cag gtg acg ggc tgg ctg gac ggc agc gcc atc tat		883
Asp Pro Ala Asn Gln Val Thr Gly Trp Leu Asp Gly Ser Ala Ile Tyr		
165	170	175
ggt tcc tcg cat tcc tgg agc gac gcg ctg cgg agc ttc tcc agg gga		931
Gly Ser Ser His Ser Trp Ser Asp Ala Leu Arg Ser Phe Ser Arg Gly		
180	185	190
cag ctg gcg tcg ggg ccc gac ccc gct ttt ccc cga gac tcg cag aac		979
Gln Leu Ala Ser Gly Pro Asp Pro Ala Phe Pro Arg Asp Ser Gln Asn		
200	205	210
ccc ctg ctc atg tgg gcg gcg ccc gac ccc gcc acc ggg cag aac ggg		1027
Pro Leu Leu Met Trp Ala Ala Pro Asp Pro Ala Thr Gly Gln Asn Gly		
215	220	225
ccc cgg ggg ctg tac gcc ttc ggg gca gag aga ggg aac cgg gaa ccc		1075
Pro Arg Gly Leu Tyr Ala Phe Gly Ala Glu Arg Gly Asn Arg Glu Pro		
230	235	240
ttc ctg cag gcg ctg ggc ctg ctc tgg ttc cgc tac cac aac ctg tgg		1123
Phe Leu Gln Ala Leu Gly Leu Trp Phe Arg Tyr His Asn Leu Trp		
245	250	255
gcg cag agg ctg gcc cgc cag cac cca gac tgg gag gac gag gag ctg		1171
Ala Gln Arg Leu Ala Arg Gln His Pro Asp Trp Glu Asp Glu Glu Leu		
260	265	270
ttc cag cac gca cgc aag agg gtc atc gcc acc tac cag aac atc gct		1219
Phe Gln His Ala Arg Lys Arg Val Ile Ala Thr Tyr Gln Asn Ile Ala		
280	285	290
gtg tat gag tgg ctg ccc agc ttc ctg cag aaa aca ctc ccg gag tat		1267
Val Tyr Glu Trp Leu Pro Ser Phe Leu Gln Lys Thr Leu Pro Glu Tyr		
295	300	305
aca gga tac cgg cca ttt ctg gac ccc agc atc tcc tca gag ttc gtg		1315
Thr Gly Tyr Arg Pro Phe Leu Asp Pro Ser Ile Ser Ser Glu Phe Val		
310	315	320
gcg gcc tct gag cag ttc ctg tcc acc atg gtc ccc cct ggc gtc tac		1363
Ala Ala Ser Glu Gln Phe Leu Ser Thr Met Val Pro Pro Gly Val Tyr		
325	330	335
atg aga aat gcc agc tgc cac ttc cag ggg gtc atc aat cgg aac tca		1411
Met Arg Asn Ala Ser Cys His Phe Gln Gly Val Ile Asn Arg Asn Ser		
340	345	350
agt gtc tcc aga gct ctc cgg gtc tgc aac agc tac tgg agc cgt gag		1459
Ser Val Ser Arg Ala Leu Arg Val Cys Asn Ser Tyr Trp Ser Arg Glu		
360	365	370

cac cca agc cta caa agt gct gaa gat gtg gat gca ctg ctg ctg ggc	1507
His Pro Ser Leu Gln Ser Ala Glu Asp Val Asp Ala Leu Leu Leu Gly	
375 380 385	
atg gcc tcc cag atc gca gag cga gag gac cat gtg ttg gtt gaa gat	1555
Met Ala Ser Gln Ile Ala Glu Arg Glu Asp His Val Leu Val Glu Asp	
390 395 400	
gtg cgg gat ttc tgg cct ggg cca ctg aag ttt tcc cgc aca gac cac	1603
Val Arg Asp Phe Trp Pro Gly Pro Leu Lys Phe Ser Arg Thr Asp His	
405 410 415	
ctg gcc agc tgc ctg cag cgg ggc cgg gat ctg ggc ctg ccc tct tac	1651
Leu Ala Ser Cys Leu Gln Arg Gly Arg Asp Leu Gly Leu Pro Ser Tyr	
420 425 430 435	
acc aag gcc agg gca gca ctg ggc ttg tct ccc att acc cgc tgg cag	1699
Thr Lys Ala Arg Ala Ala Leu Gly Leu Ser Pro Ile Thr Arg Trp Gln	
440 445 450	
gac atc aac cct gca ctc tcc cgg agc aat gac act gta ctg gag gcc	1747
Asp Ile Asn Pro Ala Leu Ser Arg Ser Asn Asp Thr Val Leu Glu Ala	
455 460 465	
aca gct gcc ctg tac aac cag gac tta tcc tgg cta gag ctg ctc cct	1795
Thr Ala Ala Leu Tyr Asn Gln Asp Leu Ser Trp Leu Glu Leu Pro	
470 475 480	
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Gly Gly Leu Leu Glu Ser His Arg Asp Pro Gly Pro Leu Phe Ser Thr	
485 490 495	
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Ile Val Leu Glu Gln Phe Val Arg Leu Arg Asp Gly Asp Arg Tyr Trp	
500 505 510 515	
ttt gag aac acc agg aat ggg ctg ttc tcc aag aag gag att gaa gaa	1939
Phe Glu Asn Thr Arg Asn Gly Leu Phe Ser Lys Lys Glu Ile Glu Glu	
520 525 530	
atc cga aat acc acc ctg cag gac gtg ctg gtc gct gtt atc aac att	1987
Ile Arg Asn Thr Thr Leu Gln Asp Val Leu Val Ala Val Ile Asn Ile	
535 540 545	
gac ccc agt gct ctg cag ccc aat gtc ttt gtc tgg cat aaa gga gac	2035
Asp Pro Ser Ala Leu Gln Pro Asn Val Phe Val Trp His Lys Gly Asp	
550 555 560	
ccc tgt ccg cag ccg aga cag ctc agc act gaa ggc ctg cca gcg tgt	2083
Pro Cys Pro Gln Pro Arg Gln Leu Ser Thr Glu Gly Leu Pro Ala Cys	
565 570 575	
gct ccc tct gtt gtt cgt gac tat ttt gag ggc agt gga ttt ggc ttc	2131

Ala Pro Ser Val Val Arg Asp Tyr Phe Glu Gly Ser Gly Phe Gly Phe			
580	585	590	595
ggg gtc acc atc ggg acc ctc tgt tgc ttc cct ttg gtg agc ctg ctc			2179
Gly Val Thr Ile Gly Thr Leu Cys Cys Phe Pro Leu Val Ser Leu Leu			
600	605	610	
agt gcc tgg att gtt gcc cgg ctc cgg atg aga aat ttc aag agg ctc			2227
Ser Ala Trp Ile Val Ala Arg Leu Arg Met Arg Asn Phe Lys Arg Leu			
615	620	625	
cag ggc cag gac cgc cag agc atc gtg tct gag aag ctc gtg gga ggc			2275
Gln Gly Gln Asp Arg Gln Ser Ile Val Ser Glu Lys Leu Val Gly Gly			
630	635	640	
atg gaa gct ttg gaa tgg caa ggc cac aag gag ccc tgc cgg ccc gtg			2323
Met Glu Ala Leu Glu Trp Gln Gly His Lys Glu Pro Cys Arg Pro Val			
645	650	655	
ctt gtg tac ctg cag ccc ggg cag atc cgt gtg gta gat ggc agg ctc			2371
Leu Val Tyr Leu Gln Pro Gly Gln Ile Arg Val Val Asp Gly Arg Leu			
660	665	670	675
acc gtg ctc cgc acc atc cag ctg cag cct cca cag aag gtc aac ttc			2419
Thr Val Leu Arg Thr Ile Gln Leu Gln Pro Pro Gln Lys Val Asn Phe			
680	685	690	
gtc ctg tcc agc aac cgt gga cgc cgc act ctg ctg ctc aag atc ccc			2467
Val Leu Ser Ser Asn Arg Gly Arg Arg Thr Leu Leu Lys Ile Pro			
695	700	705	
aag gag tat gac ctg gtg ctg ctg ttt aac ttg gag gaa gag gag cgg cag			2515
Lys Glu Tyr Asp Leu Val Leu Leu Phe Asn Leu Glu Glu Arg Gln			
710	715	720	
gct ctg gtg gaa aat ctc cgg gga gct ctg aag gag agc ggg ttg agc			2563
Ala Leu Val Glu Asn Leu Arg Gly Ala Leu Lys Glu Ser Gly Leu Ser			
725	730	735	
atc cag gag tgg gag ctg cgg gag cag gag ctg atg aga gca gct gtg			2611
Ile Gln Glu Trp Glu Leu Arg Glu Gln Glu Leu Met Arg Ala Ala Val			
740	745	750	755
aca cgg gag cag cgg agg cac ctc ctg gag acc ttt ttc agg cac ctt			2659
Thr Arg Glu Gln Arg Arg His Leu Leu Glu Thr Phe Phe Arg His Leu			
760	765	770	
ttc tcc cag gtg ctg gac atc aac cag gcc gac gca ggg acc ctg ccc			2707
Phe Ser Gln Val Leu Asp Ile Asn Gln Ala Asp Ala Gly Thr Leu Pro			
775	780	785	
ctg gac tcc tcc cag aag gtg cgg gag gcc ctg acc tgt gag ctg agc			2755
Leu Asp Ser Ser Gln Lys Val Arg Glu Ala Leu Thr Cys Glu Leu Ser			
790	795	800	

agg gcc gag ttt gcc gag tcc ctg ggc ctc aag ccc cag gac atg ttt	2803
Arg Ala Glu Phe Ala Glu Ser Leu Gly Leu Lys Pro Gln Asp Met Phe	
805 810 815	
gtg gag tcc atg ttc tct ctg gct gac aag gat ggc aat ggc tac ctg	2851
Val Glu Ser Met Phe Ser Leu Ala Asp Lys Asp Gly Asn Gly Tyr Leu	
820 825 830 835	
tcc ttc cga gag ttc ctg gac atc ctg gtg gtc ttc atg aaa ggc tct	2899
Ser Phe Arg Glu Phe Leu Asp Ile Leu Val Val Phe Met Lys Gly Ser	
840 845 850	
cct gag gaa aag tct cgc ctt atg ttc cgc atg tac gac ttt gat ggg	2947
Pro Glu Glu Lys Ser Arg Leu Met Phe Arg Met Tyr Asp Phe Asp Gly	
855 860 865	
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Asn Gly Leu Ile Ser Lys Asp Glu Phe Ile Arg Met Leu Arg Ser Phe	
870 875 880	
atc gag atc tcc aac aac tgc ctg tcc aag gcc cag ctg gct gag gtg	3043
Ile Glu Ile Ser Asn Asn Cys Leu Ser Lys Ala Gln Leu Ala Glu Val	
885 890 895	
gtg gag tcc atg ttc cgg gag tgc gga ttc cag gac aag gag gaa ctg	3091
Val Glu Ser Met Phe Arg Glu Ser Gly Phe Gln Asp Lys Glu Glu Leu	
900 905 910 915	
aca tgg gaa gat ttt cac ttc atg ctg cgg gac cac aat agc gag ctc	3139
Thr Trp Glu Asp Phe His Phe Met Leu Arg Asp His Asn Ser Glu Leu	
920 925 930 935	
cgc ttc acg cag ctc tgt gtc aaa ggg gtg gag gtg cct gaa gtc atc	3187
Arg Phe Thr Gln Leu Cys Val Lys Gly Val Glu Val Pro Glu Val Ile	
935 940 945	
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Lys Asp Leu Cys Arg Arg Ala Ser Tyr Ile Ser Gln Asp Met Ile Cys	
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Pro Ser Pro Arg Val Ser Ala Arg Cys Ser Arg Ser Asp Ile Glu Thr	
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gag ttg aca cct cag aga ctg cag tgc ccc atg gac aca gac cct ccc	3331
Glu Leu Thr Pro Gln Arg Leu Gln Cys Pro Met Asp Thr Asp Pro Pro	
980 985 990 995	
cag gag att cgg cgg agg ttt ggc aag aag gta acg tca ttc cag	3376
Gln Glu Ile Arg Arg Arg Phe Gly Lys Lys Val Thr Ser Phe Gln	
1000 1005 1010	
ccc ttg ctg ttc act gag gcg cac cga gag aag ttc caa cgc agc	3421

Pro Leu Leu Phe Thr Glu Ala His Arg Glu Lys Phe Gln Arg Ser			
1015	1020	1025	
tgt ctc cac cag acg gtg caa cag ttc aag cgc ttc att gag aac			3466
Cys Leu His Gln Thr Val Gln Gln Phe Lys Arg Phe Ile Glu Asn			
1030	1035	1040	
tac cgg cgc cac atc ggc tgc gtg gcc gtg ttc tac gcc atc gct			3511
Tyr Arg Arg His Ile Gly Cys Val Ala Val Phe Tyr Ala Ile Ala			
1045	1050	1055	
ggg ggg ctt ttc ctg gag agg gcc tac tac tac gcc ttt gcc gca			3556
Gly Gly Leu Phe Leu Glu Arg Ala Tyr Tyr Tyr Ala Phe Ala Ala			
1060	1065	1070	
cat cac acg ggc atc aca gac acc acc cgc gtg gga atc atc ctg			3601
His His Thr Gly Ile Thr Asp Thr Thr Arg Val Gly Ile Ile Leu			
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tcg cgg ggc aca gca gcc agc atc tct ttc atg ttc tcc tac atc			3646
Ser Arg Gly Thr Ala Ala Ser Ile Ser Phe Met Phe Ser Tyr Ile			
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Leu Leu Thr Met Cys Arg Asn Leu Ile Thr Phe Leu Arg Glu Thr			
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ttc ctc aac cgc tac gtg ccc ttc gac gcc gcc gtg gac ttc cat			3736
Phe Leu Asn Arg Tyr Val Pro Phe Asp Ala Ala Val Asp Phe His			
1120	1125	1130	
cgc ctc att gcc tcc acc gcc atc gtc ctc aca gtc tta cac agt			3781
Arg Leu Ile Ala Ser Thr Ala Ile Val Leu Thr Val Leu His Ser			
1135	1140	1145	
gtg ggc cat gtg gtg aat gtg tac ctg ttc tcc atc agc ccc ctc			3826
Val Gly His Val Val Asn Val Tyr Leu Phe Ser Ile Ser Pro Leu			
1150	1155	1160	
agc gtc ctc tct tgc ctc ttt cct ggc ctc ttc cat gat gat ggg			3871
Ser Val Leu Ser Cys Leu Phe Pro Gly Leu Phe His Asp Asp Gly			
1165	1170	1175	
tct gag ctc ccc cag aag tat tac tgg tgg ttc ttg cag acc gta			3916
Ser Glu Leu Pro Gln Lys Tyr Tyr Trp Trp Phe Phe Gln Thr Val			
1180	1185	1190	
cca ggc ctc acg ggg gtt gtg ctg ctc ctg atc ctg gcc atc atg			3961
Pro Gly Leu Thr Gly Val Val Leu Leu Ile Leu Ala Ile Met			
1195	1200	1205	
tat gtc ttt gcc tcc cac cac ttg cgc cgc cgc agt ttc cgg ggc			4006
Tyr Val Phe Ala Ser His His Phe Arg Arg Arg Ser Phe Arg Gly			
1210	1215	1220	

ttc tgg ctg acc cac cac ctc tac atc ctg	ctc tat gtc ctg ctc	4051
Phe Trp Leu Thr His His Leu Tyr Ile Leu	Leu Tyr Val Leu Leu	
1225	1230	1235
atc atc cat ggt agc ttt gcc ctg atc cag	ctg ccc cgt ttc cac	4096
Ile Ile His Gly Ser Phe Ala Leu Ile Gln	Leu Pro Arg Phe His	
1240	1245	1250
atc ttc ttc ctg gtc cca gca atc atc tat	ggg ggc gac aag ctg	4141
Ile Phe Phe Leu Val Pro Ala Ile Ile Tyr	Gly Gly Asp Lys Leu	
1255	1260	1265
gtg agc ctg agc cgg aag aag gtg gag atc	agc gtg gtg aag gcg	4186
Val Ser Leu Ser Arg Lys Lys Val Glu Ile	Ser Val Val Lys Ala	
1270	1275	1280
gag ctg ctg ccc tca gga gtg acc cac ctg	cggttcc cag cgg ccc	4231
Glu Leu Leu Pro Ser Gly Val Thr His Leu	Arg Phe Gln Arg Pro	
1285	1290	1295
cag ggc ttt gag tac aag tca ggg cag tgg	gtg cgg atc gct tgc	4276
Gln Gly Phe Glu Tyr Lys Ser Gly Gln Trp	Val Arg Ile Ala Cys	
1300	1305	1310
ctg gct ctg ggg acc acc gag tac cac ccc	ttc aca ctg acc tct	4321
Leu Ala Leu Gly Thr Thr Glu Tyr His Pro	Phe Thr Leu Thr Ser	
1315	1320	1325
gcg ccc cat gag gac acg ctt agc ctg cac	atc cgg gca gca ggg	4366
Ala Pro His Glu Asp Thr Leu Ser Leu His	Ile Arg Ala Ala Gly	
1330	1335	1340
ccc tgg acc act cgc ctc agg gag atc tac	tca gcc ccg acg ggt	4411
Pro Trp Thr Thr Arg Leu Arg Glu Ile Tyr	Ser Ala Pro Thr Gly	
1345	1350	1355
gac aga tgt gcc aga tac cca aag ctg tac	ctt gat gga cca ttt	4456
Asp Arg Cys Ala Arg Tyr Pro Lys Leu Tyr	Leu Asp Gly Pro Phe	
1360	1365	1370
gga gag ggc cac cag gag tgg cat aag ttt	gag gtg tca gtg tta	4501
Gly Glu Gly His Gln Glu Trp His Lys Phe	Glu Val Ser Val Leu	
1375	1380	1385
gtg gga ggg ggc att ggg gtc acc cct ttt	gcc tcc atc ctc aaa	4546
Val Gly Gly Ile Gly Val Thr Pro Phe Ala	Ser Ile Leu Lys	
1390	1395	1400
gac ctg gtc ttc aag tca tcc gtc agc tgc	caa gtg ttc tgt aag	4591
Asp Leu Val Phe Lys Ser Ser Val Ser Cys	Gln Val Phe Cys Lys	
1405	1410	1415
aag atc tac ttc atc tgg gtg acg cgg acc	cag cgt cag ttt gag	4636

Lys Ile Tyr Phe Ile Trp Val Thr Arg Thr Gln Arg Gln Phe Glu		
1420	1425	1430
tgg ctg gct gac atc atc cga gag gtg gag gag aat gac cac cag		4681
Trp Leu Ala Asp Ile Ile Arg Glu Val Glu Glu Asn Asp His Gln		
1435	1440	1445
gac ctg gtg tct gtg cac atc tac atc acc cag ctg gct gag aag		4726
Asp Leu Val Ser Val His Ile Tyr Ile Thr Gln Leu Ala Glu Lys		
1450	1455	1460
ttc gac ctc agg acc act atg ctg tac atc tgt gag cgg cac ttc		4771
Phe Asp Leu Arg Thr Thr Met Leu Tyr Ile Cys Glu Arg His Phe		
1465	1470	1475
cag aag gtt ctg aac cgg agt cta ttc aca ggc ctg cgc tcc atc		4816
Gln Lys Val Leu Asn Arg Ser Leu Phe Thr Gly Leu Arg Ser Ile		
1480	1485	1490
acc cac ttt ggc cgt ccc ccc ttt gag ccc ttc ttc aac tcc ctg		4861
Thr His Phe Gly Arg Pro Pro Phe Glu Pro Phe Phe Asn Ser Leu		
1495	1500	1505
cag gag gtc cac ccc cag gtc cgg aag atc ggg gtg ttt agc tgt		4906
Gln Glu Val His Pro Gln Val Arg Lys Ile Gly Val Phe Ser Cys		
1510	1515	1520
ggc ccc cct ggc atg acc aag aat gtg gaa aag gcc tgt cag ctc		4951
Gly Pro Pro Gly Met Thr Lys Asn Val Glu Lys Ala Cys Gln Leu		
1525	1530	1535
atc aac agg cag gac cgg act cac ttc tcc cac cat tat gag aac		4996
Ile Asn Arg Gln Asp Arg Thr His Phe Ser His His Tyr Glu Asn		
1540	1545	1550
ttc tag gccccgtcccc gggggttctg cccactgccc agttgagcag aggtttgagc		5052
Phe		
ccacacccca cctctgttct tcctatttct ggctgcctca gccttctctg atttccacc		5112
tcccaacctt gttccaggtg gccatagtc gtcaccatgt gtgggctcag ggaccccccag		5172
gaccaggatg tgtctcagcc tggagaaaatg gtggggggc agtgtctagg gactagagt		5232
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caaatctcag aagacaagct gacctgacaa gtactatgtg tgtgcattgtc tgtatgtgt		5352
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gtcttaacacc acaactaatt tcacccaagg ttttaagcac gtttttcat cagaccctgg 5592
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Asp Gly Trp Tyr Asn Asn Leu Met Glu His Arg Trp Gly Ser Lys Gly
 35 40 45

Ser Arg Leu Gln Arg Leu Val Pro Ala Ser Tyr Ala Asp Gly Val Tyr
 50 55 60

Gln Pro Leu Gly Glu Pro His Leu Pro Asn Pro Arg Asp Leu Ser Asn
 65 70 75 80

Thr Ile Ser Arg Gly Pro Ala Gly Leu Ala Ser Leu Arg Asn Arg Thr
 85 90 95

Val Leu Gly Val Phe Phe Gly Tyr His Val Leu Ser Asp Leu Val Ser
 100 105 110

Val Glu Thr Pro Gly Cys Pro Ala Glu Phe Leu Asn Ile Arg Ile Pro
 115 120 125

Pro Gly Asp Pro Met Phe Asp Pro Asp Gln Arg Gly Asp Val Val Leu
 130 135 140

Pro Phe Gln Arg Ser Arg Trp Asp Pro Glu Thr Gly Arg Ser Pro Ser
 145 150 155 160

Asn Pro Arg Asp Pro Ala Asn Gln Val Thr Gly Trp Leu Asp Gly Ser
 165 170 175

Ala Ile Tyr Gly Ser Ser His Ser Trp Ser Asp Ala Leu Arg Ser Phe
 180 185 190

Ser Arg Gly Gln Leu Ala Ser Gly Pro Asp Pro Ala Phe Pro Arg Asp
 195 200 205

Ser Gln Asn Pro Leu Leu Met Trp Ala Ala Pro Asp Pro Ala Thr Gly
 210 215 220

Gln Asn Gly Pro Arg Gly Leu Tyr Ala Phe Gly Ala Glu Arg Gly Asn
 225 230 235 240

Arg Glu Pro Phe Leu Gln Ala Leu Gly Leu Leu Trp Phe Arg Tyr His
 245 250 255

Asn Leu Trp Ala Gln Arg Leu Ala Arg Gln His Pro Asp Trp Glu Asp
 260 265 270

Glu Glu Leu Phe Gln His Ala Arg Lys Arg Val Ile Ala Thr Tyr Gln
 275 280 285

Asn Ile Ala Val Tyr Glu Trp Leu Pro Ser Phe Leu Gln Lys Thr Leu
 290 295 300

Pro Glu Tyr Thr Gly Tyr Arg Pro Phe Leu Asp Pro Ser Ile Ser Ser
 305 310 315 320

Glu Phe Val Ala Ala Ser Glu Gln Phe Leu Ser Thr Met Val Pro Pro
 325 330 335

Gly Val Tyr Met Arg Asn Ala Ser Cys His Phe Gln Gly Val Ile Asn
 340 345 350

Arg Asn Ser Ser Val Ser Arg Ala Leu Arg Val Cys Asn Ser Tyr Trp
 355 360 365

Ser Arg Glu His Pro Ser Leu Gln Ser Ala Glu Asp Val Asp Ala Leu
 370 375 380

Leu Leu Gly Met Ala Ser Gln Ile Ala Glu Arg Glu Asp His Val Leu
 385 390 395 400

Val Glu Asp Val Arg Asp Phe Trp Pro Gly Pro Leu Lys Phe Ser Arg
 405 410 415

Thr Asp His Leu Ala Ser Cys Leu Gln Arg Gly Arg Asp Leu Gly Leu
 420 425 430

Pro Ser Tyr Thr Lys Ala Arg Ala Ala Leu Gly Leu Ser Pro Ile Thr
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Arg Trp Gln Asp Ile Asn Pro Ala Leu Ser Arg Ser Asn Asp Thr Val
 450 455 460

Leu Glu Ala Thr Ala Ala Leu Tyr Asn Gln Asp Leu Ser Trp Leu Glu
 465 470 475 480

Leu Leu Pro Gly Gly Leu Leu Glu Ser His Arg Asp Pro Gly Pro Leu
 485 490 495

Phe Ser Thr Ile Val Leu Glu Gln Phe Val Arg Leu Arg Asp Gly Asp
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Arg Tyr Trp Phe Glu Asn Thr Arg Asn Gly Leu Phe Ser Lys Lys Glu
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Ile Glu Glu Ile Arg Asn Thr Thr Leu Gln Asp Val Leu Val Ala Val
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Ile Asn Ile Asp Pro Ser Ala Leu Gln Pro Asn Val Phe Val Trp His
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Lys Gly Asp Pro Cys Pro Gln Pro Arg Gln Leu Ser Thr Glu Gly Leu
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Pro Ala Cys Ala Pro Ser Val Val Arg Asp Tyr Phe Glu Gly Ser Gly
 580 585 590

Phe Gly Phe Gly Val Thr Ile Gly Thr Leu Cys Cys Phe Pro Leu Val
 595 600 605

Ser Leu Leu Ser Ala Trp Ile Val Ala Arg Leu Arg Met Arg Asn Phe
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Lys Arg Leu Gln Gly Gln Asp Arg Gln Ser Ile Val Ser Glu Lys Leu
 625 630 635 640

Val Gly Gly Met Glu Ala Leu Glu Trp Gln Gly His Lys Glu Pro Cys
 645 650 655

Arg Pro Val Leu Val Tyr Leu Gln Pro Gly Gln Ile Arg Val Val Asp
 660 665 670

Gly Arg Leu Thr Val Leu Arg Thr Ile Gln Leu Gln Pro Pro Gln Lys
 675 680 685

Val Asn Phe Val Leu Ser Ser Asn Arg Gly Arg Arg Thr Leu Leu Leu
 690 695 700

Lys Ile Pro Lys Glu Tyr Asp Leu Val Leu Leu Phe Asn Leu Glu Glu
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Glu Arg Gln Ala Leu Val Glu Asn Leu Arg Gly Ala Leu Lys Glu Ser
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Gly Leu Ser Ile Gln Glu Trp Glu Leu Arg Glu Gln Glu Leu Met Arg
 740 745 750

Ala Ala Val Thr Arg Glu Gln Arg Arg His Leu Leu Glu Thr Phe Phe
 755 760 765

Arg His Leu Phe Ser Gln Val Leu Asp Ile Asn Gln Ala Asp Ala Gly
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Thr Leu Pro Leu Asp Ser Ser Gln Lys Val Arg Glu Ala Leu Thr Cys
 785 790 795 800

Glu Leu Ser Arg Ala Glu Phe Ala Glu Ser Leu Gly Leu Lys Pro Gln
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Asp Met Phe Val Glu Ser Met Phe Ser Leu Ala Asp Lys Asp Gly Asn
 820 825 830

Gly Tyr Leu Ser Phe Arg Glu Phe Leu Asp Ile Leu Val Val Phe Met
 835 840 845

Lys Gly Ser Pro Glu Glu Lys Ser Arg Leu Met Phe Arg Met Tyr Asp
 850 855 860

Phe Asp Gly Asn Gly Leu Ile Ser Lys Asp Glu Phe Ile Arg Met Leu
 865 870 875 880

Arg Ser Phe Ile Glu Ile Ser Asn Asn Cys Leu Ser Lys Ala Gln Leu
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Ala Glu Val Val Glu Ser Met Phe Arg Glu Ser Gly Phe Gln Asp Lys
 900 905 910

Glu Glu Leu Thr Trp Glu Asp Phe His Phe Met Leu Arg Asp His Asn
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Ser Glu Leu Arg Phe Thr Gln Leu Cys Val Lys Gly Val Glu Val Pro
 930 935 940

Glu Val Ile Lys Asp Leu Cys Arg Arg Ala Ser Tyr Ile Ser Gln Asp
 945 950 955 960

Met Ile Cys Pro Ser Pro Arg Val Ser Ala Arg Cys Ser Arg Ser Asp
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Ile Glu Thr Glu Leu Thr Pro Gln Arg Leu Gln Cys Pro Met Asp Thr
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Asp Pro Pro Gln Glu Ile Arg Arg Arg Phe Gly Lys Lys Val Thr Ser
 995 1000 1005

Phe Gln Pro Leu Leu Phe Thr Glu Ala His Arg Glu Lys Phe Gln
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Arg Ser Cys Leu His Gln Thr Val Gln Gln Phe Lys Arg Phe Ile
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Glu Asn Tyr Arg Arg His Ile Gly Cys Val Ala Val Phe Tyr Ala
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Ile Ala Gly Gly Leu Phe Leu Glu Arg Ala Tyr Tyr Tyr Ala Phe
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Ala Ala His His Thr Gly Ile Thr Asp Thr Thr Arg Val Gly Ile
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Ile Leu Ser Arg Gly Thr Ala Ala Ser Ile Ser Phe Met Phe Ser
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Tyr Ile Leu Leu Thr Met Cys Arg Asn Leu Ile Thr Phe Leu Arg
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Glu Thr Phe Leu Asn Arg Tyr Val Pro Phe Asp Ala Ala Val Asp
 1115 1120 1125

Phe His Arg Leu Ile Ala Ser Thr Ala Ile Val Leu Thr Val Leu
 1130 1135 1140

His Ser Val Gly His Val Val Asn Val Tyr Leu Phe Ser Ile Ser
 1145 1150 1155

Pro Leu Ser Val Leu Ser Cys Leu Phe Pro Gly Leu Phe His Asp
 1160 1165 1170

Asp Gly Ser Glu Leu Pro Gln Lys Tyr Tyr Trp Trp Phe Phe Gln
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Thr Val Pro Gly Leu Thr Gly Val Val Leu Leu Ile Leu Ala
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Ile Met Tyr Val Phe Ala Ser His His Phe Arg Arg Arg Ser Phe
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Arg Gly Phe Trp Leu Thr His His Leu Tyr Ile Leu Leu Tyr Val
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Leu Leu Ile Ile His Gly Ser Phe Ala Leu Ile Gln Leu Pro Arg
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Phe His Ile Phe Phe Leu Val Pro Ala Ile Ile Tyr Gly Gly Asp
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Lys Leu Val Ser Leu Ser Arg Lys Lys Val Glu Ile Ser Val Val
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Lys Ala Glu Leu Leu Pro Ser Gly Val Thr His Leu Arg Phe Gln
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Arg Pro Gln Gly Phe Glu Tyr Lys Ser Gly Gln Trp Val Arg Ile
 1295 1300 1305

Ala Cys Leu Ala Leu Gly Thr Thr Glu Tyr His Pro Phe Thr Leu
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Thr Ser Ala Pro His Glu Asp Thr Leu Ser Leu His Ile Arg Ala
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Ala Gly Pro Trp Thr Thr Arg Leu Arg Glu Ile Tyr Ser Ala Pro
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Thr Gly Asp Arg Cys Ala Arg Tyr Pro Lys Leu Tyr Leu Asp Gly
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Pro Phe Gly Glu Gly His Gln Glu Trp His Lys Phe Glu Val Ser
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Val Leu Val Gly Gly Ile Gly Val Thr Pro Phe Ala Ser Ile
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Leu Lys Asp Leu Val Phe Lys Ser Ser Val Ser Cys Gln Val Phe
 1400 1405 1410

Cys Lys Lys Ile Tyr Phe Ile Trp Val Thr Arg Thr Gln Arg Gln
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Phe Glu Trp Leu Ala Asp Ile Ile Arg Glu Val Glu Glu Asn Asp
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His Gln Asp Leu Val Ser Val His Ile Tyr Ile Thr Gln Leu Ala
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Glu Lys Phe Asp Leu Arg Thr Thr Met Leu Tyr Ile Cys Glu Arg
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His Phe Gln Lys Val Leu Asn Arg Ser Leu Phe Thr Gly Leu Arg
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Ser Ile Thr His Phe Gly Arg Pro Pro Phe Glu Pro Phe Phe Asn
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Ser Leu Gln Glu Val His Pro Gln Val Arg Lys Ile Gly Val Phe
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Ser Cys Gly Pro Pro Gly Met Thr Lys Asn Val Glu Lys Ala Cys
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 gtagagcaca gaagcaaaga tttaagagg aaagaagaca tctgaacccca acaccaccc 180
 aaaccacagg ctgcagggtt ggc atg ctc cgt gca aga cca gag gca ctg atg 233
 Met Leu Arg Ala Arg Pro Glu Ala Leu Met
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 ctc ctg gga gct ctt ctg act gga tcc ctg ggt cca tcg ggc agt cag 281
 Leu Leu Gly Ala Leu Leu Thr Gly Ser Leu Gly Pro Ser Gly Ser Gln
 15 20 25
 gac gca ctc tca ctg ccc tgg gaa gtg cag cgcc tat gac ggc tgg ttt 329
 Asp Ala Leu Ser Leu Pro Trp Glu Val Gln Arg Tyr Asp Gly Trp Phe
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 Asn Asn Leu Arg His His Glu Arg Gly Ala Val Gly Cys Arg Leu Gln
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 cgc cgc gta cca gcc aat tac gcc gac ggt gtg tat cag gct ctg gag 425
 Arg Arg Val Pro Ala Asn Tyr Ala Asp Gly Val Tyr Gln Ala Leu Glu
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 gag ccg cag ctg ccc aac ccg cgc cgg ctc agc aac gca gcc acg cgg 473
 Glu Pro Gln Leu Pro Asn Pro Arg Arg Leu Ser Asn Ala Ala Thr Arg
 75 80 85 90
 ggc ata gcc ggc ctg ccg tcg ctc cac aac cgc acc gta ctg ggg gtc 521
 Gly Ile Ala Gly Leu Pro Ser Leu His Asn Arg Thr Val Leu Gly Val
 95 100 105
 ttc ttt ggc tac cat gtt ctt tcc gac gtg gtg agc gtg gaa acg ccc 569
 Phe Phe Gly Tyr His Val Leu Ser Asp Val Val Ser Val Glu Thr Pro
 110 115 120
 ggt tgc ccc gcc gag ttc ctc aac atc cgc atc cca cct gga gac ccc 617
 Gly Cys Pro Ala Glu Phe Leu Asn Ile Arg Ile Pro Pro Gly Asp Pro
 125 130 135
 gtg ttc gac ccc gac cag cgc ggg gac gtg gtg ctg ccc ttc cag agg 665
 Val Phe Asp Pro Asp Gln Arg Gly Asp Val Val Leu Pro Phe Gln Arg
 140 145 150

agc cgc tgg gac ccc gag acc gga cgg agt ccc agc aac ccc cgg gac	155	160	165	170	713
Ser Arg Trp Asp Pro Glu Thr Gly Arg Ser Pro Ser Asn Pro Arg Asp					
ctg gcc aac cag gtg acg ggc tgg ctg gac ggc agc gcc atc tat ggc	175	180	185		761
Leu Ala Asn Gln Val Thr Gly Trp Leu Asp Gly Ser Ala Ile Tyr Gly					
tcc tcg cac tcc tgg agc gac ggc ctg cgg agc ttc tcg ggg gga cag	190	195	200		809
Ser Ser His Ser Trp Ser Asp Ala Leu Arg Ser Phe Ser Gly Gly Gln					
ctg gcg tcg ggg ccc gac ccc gct ttc ccc cga gac tcg cag aac ccc	205	210	215		857
Leu Ala Ser Gly Pro Asp Pro Ala Phe Pro Arg Asp Ser Gln Asn Pro					
ctg ctc atg tgg gcg gcg ccc gac ccc gcc acc ggg cag aac ggg ccc	220	225	230		905
Leu Leu Met Trp Ala Ala Pro Asp Pro Ala Thr Gly Gln Asn Gly Pro					
cgg ggg ctg tac gcc ttc ggg gca gag aga ggg aac cgg gaa ccc ttc	235	240	245	250	953
Arg Gly Leu Tyr Ala Phe Gly Ala Glu Arg Gly Asn Arg Glu Pro Phe					
ctg cag gcg ctg ggc ctg ctc tgg ttc cgc tac cac aac ctg tgg gcg	255	260	265		1001
Leu Gln Ala Leu Gly Leu Leu Trp Phe Arg Tyr His Asn Leu Trp Ala					
cag agg ctg gcc cgc cag cac cca gac tgg gag gac gag gag ctg ttc	270	275	280		1049
Gln Arg Leu Ala Arg Gln His Pro Asp Trp Glu Asp Glu Leu Phe					
cag cac gca cgc aag agg gtc atc gcc acc tac cag aac atc gct gtc	285	290	295		1097
Gln His Ala Arg Lys Arg Val Ile Ala Thr Tyr Gln Asn Ile Ala Val					
tat gag tgg ctg ccc agc ttc ctg cag aaa aca ctc ccg gag tat aca	300	305	310		1145
Tyr Glu Trp Leu Pro Ser Phe Leu Gln Lys Thr Leu Pro Glu Tyr Thr					
gga tac cgt cct ttc cta gac ccc agc atc tcc ccg gaa ttt gtg gtg	315	320	325	330	1193
Gly Tyr Arg Pro Phe Leu Asp Pro Ser Ile Ser Pro Glu Phe Val Val					
gcc tct gag cag ttc ttc tct acc atg gtg ccc cct ggt gtc tac atg	335	340	345		1241
Ala Ser Glu Gln Phe Phe Ser Thr Met Val Pro Pro Gly Val Tyr Met					
aga aat gcc agc tgt cat ttc cgg aag gtc ctg aac aag ggt ttt caa	350	355	360		1289
Arg Asn Ala Ser Cys His Phe Arg Lys Val Leu Asn Lys Gly Phe Gln					
agc tcc caa gct ctc agg gtc tgc aac aac tac tgg att cgg gag aac					1337

Ser Ser Gln Ala Leu Arg Val Cys Asn Asn Tyr Trp Ile Arg Glu Asn			
365	370	375	
ccc aat ctg aac agt acc cag gag gtg aat gag ctg ctg gta atg			1385
Pro Asn Leu Asn Ser Thr Gln Glu Val Asn Glu Leu Leu Gly Met			
380	385	390	
gcc tcc cag att tcg gag ttg gag gac aac ata gtg gtt gaa gat ctg			1433
Ala Ser Gln Ile Ser Glu Leu Glu Asp Asn Ile Val Val Glu Asp Leu			
395	400	405	410
agg gat tac tgg cct ggc cct ggc aaa ttc tcc cgt aca gac tat gtg			1481
Arg Asp Tyr Trp Pro Gly Pro Gly Lys Phe Ser Arg Thr Asp Tyr Val			
415	420	425	
gcc agc agc atc caa cgt ggc cga gat atg ggg ctg ccc agc tat agc			1529
Ala Ser Ser Ile Gln Arg Gly Arg Asp Met Gly Leu Pro Ser Tyr Ser			
430	435	440	
cag gcc ctg ctg gcc ttt ggg ctg gac atc cca agg aac tgg agt gat			1577
Gln Ala Leu Leu Ala Phe Gly Leu Asp Ile Pro Arg Asn Trp Ser Asp			
445	450	455	
ctc aac cct aat gtg gac ccc cag gtg ctg gag gcc aca gct gcc ctg			1625
Leu Asn Pro Asn Val Asp Pro Gln Val Leu Glu Ala Thr Ala Ala Leu			
460	465	470	
tac aac cag gac cta tcc cag cta gag ctg ctc ctt ggg ggg ctc ctg			1673
Tyr Asn Gln Asp Leu Ser Gln Leu Glu Leu Leu Gly Gly Leu Leu			
475	480	485	490
gag agc cat ggg gac cct gga ccc ctg ttc agt gcc att gtc ctc gac			1721
Glu Ser His Gly Asp Pro Gly Pro Leu Phe Ser Ala Ile Val Leu Asp			
495	500	505	
cag ttt gta cgg ctg cgg gat ggt gac cgc tac tgg ttt gag aac acc			1769
Gln Phe Val Arg Leu Arg Asp Gly Asp Arg Tyr Trp Phe Glu Asn Thr			
510	515	520	
agg aat ggg ctg ttc tcc aag aag gag att gaa gac atc cga aat acc			1817
Arg Asn Gly Leu Phe Ser Lys Lys Glu Ile Glu Asp Ile Arg Asn Thr			
525	530	535	
acc ctg cgg gac gtg ctg gtc gct gtt atc aac att gac ccc agt gcc			1865
Thr Leu Arg Asp Val Leu Val Ala Val Ile Asn Ile Asp Pro Ser Ala			
540	545	550	
ctg cag ccc aat gtc ttt gtc tgg cat aaa ggt gca ccc tgc cct caa			1913
Leu Gln Pro Asn Val Phe Val Trp His Lys Gly Ala Pro Cys Pro Gln			
555	560	565	570
cct aag cag ctc aca act gac ggc ctg ccc cag tgg gca ccc ctg act			1961
Pro Lys Gln Leu Thr Thr Asp Gly Leu Pro Gln Cys Ala Pro Leu Thr			
575	580	585	

gtg ctt gac ttc ttt gaa ggc agc agc cct ggt ttt gcc atc acc atc 2009
 Val Leu Asp Phe Phe Glu Gly Ser Ser Pro Gly Phe Ala Ile Thr Ile
 590 595 600

att gct ctc tgc tgc ctt ccc tta gtg agt ctg ctt ctc tct gga gtg 2057
 Ile Ala Leu Cys Cys Leu Pro Leu Val Ser Leu Leu Ser Gly Val
 605 610 615

gtg gcc tat ttc cgg ggc cga gaa cac aag aag cta caa aag aaa ctc 2105
 Val Ala Tyr Phe Arg Gly Arg Glu His Lys Lys Leu Gln Lys Lys Leu
 620 625 630

aaa gag agc gtg aag aag gaa gca gcc aaa gat gga gtg cca gcg atg 2153
 Lys Glu Ser Val Lys Lys Glu Ala Ala Lys Asp Gly Val Pro Ala Met
 635 640 645 650

gag tgg cca ggc ccc aag gag agg agc agt ccc atc atc atc cag ctg 2201
 Glu Trp Pro Gly Pro Lys Glu Arg Ser Ser Pro Ile Ile Ile Gln Leu
 655 660 665

ctg tca gac agg tgg ctg cag gtc ctg aac agg cat ctc act gtg ctc 2249
 Leu Ser Asp Arg Cys Leu Gln Val Leu Asn Arg His Leu Thr Val Leu
 670 675 680

cgt gtg gtc cag ctg cag cct ctg cag cag gtc aac ctc atc ctg tcc 2297
 Arg Val Val Gln Leu Gln Pro Leu Gln Gln Val Asn Leu Ile Leu Ser
 685 690 695

aac aac cga gga tgc cgc acc ctg ctg ctc aag atc cct aag gag tat 2345
 Asn Asn Arg Gly Cys Arg Thr Leu Leu Leu Lys Ile Pro Lys Glu Tyr
 700 705 710

gac ctg gtg ctg ctg ttt agt tct gaa gag gaa cgg ggc gcc ttt gtg 2393
 Asp Leu Val Leu Leu Phe Ser Ser Glu Glu Arg Gly Ala Phe Val
 715 720 725 730

cag cag cta tgg gac ttc tgc gtg cgc tgg gct ctg ggc ctc cat gtg 2441
 Gln Gln Leu Trp Asp Phe Cys Val Arg Trp Ala Leu Gly Leu His Val
 735 740 745

gct gag atg agc gag aag gag cta ttt agg aag gct gtg aca aag cag 2489
 Ala Glu Met Ser Glu Lys Glu Leu Phe Arg Lys Ala Val Thr Lys Gln
 750 755 760

ca g cg gaa cgc atc ctg gag atc ttc ttc aga cac ctt ttt gct cag 2537
 Gln Arg Glu Arg Ile Leu Glu Ile Phe Phe Arg His Leu Phe Ala Gln
 765 770 775

gtg ctg gac atc aac cag gcc gac gca ggg acc ctg ccc ctg gac tcc 2585
 Val Leu Asp Ile Asn Gln Ala Asp Ala Gly Thr Leu Pro Leu Asp Ser
 780 785 790

tcc cag aag gtg cgg gag gcc ctg acc tgc gag ctg agc agg gcc gag 2633

Ser Gln Lys Val Arg Glu Ala Leu Thr Cys Glu Leu Ser Arg Ala Glu			
795 800 805 810			
ttt gcc gag tcc ctg ggc ctc aag ccc cag gac atg ttt gtg gag tcc	2681		
Phe Ala Glu Ser Leu Gly Leu Lys Pro Gln Asp Met Phe Val Glu Ser			
815 820 825			
atg ttc tct ctg gct gac aag gat ggc aat ggc tac ctg tcc ttc cga	2729		
Met Phe Ser Leu Ala Asp Lys Asp Gly Asn Gly Tyr Leu Ser Phe Arg			
830 835 840			
gag ttc ctg gac atc ctg gtg gtc ttc atg aaa ggc tcc cca gag gat	2777		
Glu Phe Leu Asp Ile Leu Val Val Phe Met Lys Gly Ser Pro Glu Asp			
845 850 855			
aag tcc cgt cta atg ttt acc atg tat gac ctg gat gag aat ggc ttc	2825		
Lys Ser Arg Leu Met Phe Thr Met Tyr Asp Leu Asp Glu Asn Gly Phe			
860 865 870			
ctc tcc aag gac gaa ttc ttc acc atg atg cga tcc ttc atc gag atc	2873		
Leu Ser Lys Asp Glu Phe Phe Thr Met Arg Ser Phe Ile Glu Ile			
875 880 885 890			
tcc aac aac tgc ctg tcc aag gcc cag ctg gcc gag gtg gtg gag tct	2921		
Ser Asn Asn Cys Leu Ser Lys Ala Gln Leu Ala Glu Val Val Glu Ser			
895 900 905			
atg ttc cgg gag tcg gga ttc cag gac aag gag gag ctg aca tgg gag	2969		
Met Phe Arg Glu Ser Gly Phe Gln Asp Lys Glu Glu Leu Thr Trp Glu			
910 915 920			
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Asp Phe His Phe Met Leu Arg Asp His Asp Ser Glu Leu Arg Phe Thr			
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Gln Leu Cys Val Lys Gly Gly Gly Gly Gly Asn Gly Ile Arg Asp			
940 945 950			
atc ttt aaa caa aac atc agc tgt cga gtc tcg ttc atc act cgg aca	3113		
Ile Phe Lys Gln Asn Ile Ser Cys Arg Val Ser Phe Ile Thr Arg Thr			
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Pro Gly Glu Arg Ser His Pro Gln Gly Leu Gly Pro Pro Ala Pro Glu			
975 980 985			
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Ala Pro Glu Leu Gly Gly Pro Gly Leu Lys Lys Arg Phe Gly Lys Lys			
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Ala Ala Val Pro Thr Pro Arg Leu Tyr Thr Glu Ala Leu Gln Glu			
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Lys Met Gln Arg Gly Phe Leu Ala Gln Lys Leu Gln Gln Tyr Lys	
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Phe Ser Ala Ile Cys Val Gly Val Phe Ala Asp Arg Ala Tyr Tyr	
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Tyr Gly Phe Ala Ser Pro Pro Ser Asp Ile Ala Gln Thr Thr Leu	
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Val Gly Ile Ile Leu Ser Arg Gly Thr Ala Ala Ser Val Ser Phe	
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atg ttc tct tat atc ttg ctc acc atg tgc cgc aac ctc ata acc	3524
Met Phe Ser Tyr Ile Leu Leu Thr Met Cys Arg Asn Leu Ile Thr	
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Phe Leu Arg Glu Thr Phe Leu Asn Arg Tyr Val Pro Phe Asp Ala	
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Ala Val Asp Phe His Arg Trp Ile Ala Met Ala Ala Val Val Leu	
1125 1130 1135	
gcc att ttg cac agt gct ggc cac gca gtc aat gtc tac atc ttc	3659
Ala Ile Leu His Ser Ala Gly His Ala Val Asn Val Tyr Ile Phe	
1140 1145 1150	
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Ser Val Ser Pro Leu Ser Leu Leu Ala Cys Ile Phe Pro Asn Val	
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Phe Val Asn Asp Gly Ser Lys Leu Pro Gln Lys Phe Tyr Trp Trp	
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Phe Phe Gln Thr Val Pro Gly Met Thr Gly Val Leu Leu Leu Leu	
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gtc ctg gcc atc atg tat gtc ttc gcc tcc cac cac ttc cgc cgc	3839
Val Leu Ala Ile Met Tyr Val Phe Ala Ser His His Phe Arg Arg	
1200 1205 1210	
cgc agc ttc cgg ggc ttc tgg ctg acc cac cac ctc tac atc ctg	3884

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Glu Asn Asp	His Gln Asp Leu Val	Ser Val His Ile Tyr	Val Thr	
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Gln Leu Ala	Glu Lys Phe Asp Leu	Arg Thr Thr Met Leu	Tyr Ile	
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tgc gag cgg	cac ttc cag aaa gtg	ctg aac cgg agt ctg	ttc acg	4649
Cys Glu Arg	His Phe Gln Lys Val	Leu Asn Arg Ser Leu	Phe Thr	
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Gly Leu Arg	Ser Ile Thr His Phe	Gly Arg Pro Pro Phe	Glu Pro	
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Gly Val Phe	Ser Cys Gly Pro Pro	Gly Met Thr Lys Asn	Val Glu	
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Lys Ala Cys	Gln Leu Val Asn Arg	Gln Asp Arg Ala His	Phe Met	
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His His Tyr	Glu Asn Phe			
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Glu Arg Gly Ala Val Gly Cys Arg Leu Gln Arg Arg Val Pro Ala Asn
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Tyr Ala Asp Gly Val Tyr Gln Ala Leu Glu Glu Pro Gln Leu Pro Asn
 65 70 75 80

Pro Arg Arg Leu Ser Asn Ala Ala Thr Arg Gly Ile Ala Gly Leu Pro
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Ser Leu His Asn Arg Thr Val Leu Gly Val Phe Phe Gly Tyr His Val
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Leu Ser Asp Val Val Ser Val Glu Thr Pro Gly Cys Pro Ala Glu Phe
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Leu Asn Ile Arg Ile Pro Pro Gly Asp Pro Val Phe Asp Pro Asp Gln
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Arg Gly Asp Val Val Leu Pro Phe Gln Arg Ser Arg Trp Asp Pro Glu
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Thr Gly Arg Ser Pro Ser Asn Pro Arg Asp Leu Ala Asn Gln Val Thr
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Gly Trp Leu Asp Gly Ser Ala Ile Tyr Gly Ser Ser His Ser Trp Ser
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Asp Ala Leu Arg Ser Phe Ser Gly Gly Gln Leu Ala Ser Gly Pro Asp
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Pro Ala Phe Pro Arg Asp Ser Gln Asn Pro Leu Leu Met Trp Ala Ala
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Pro Asp Pro Ala Thr Gly Gln Asn Gly Pro Arg Gly Leu Tyr Ala Phe
 225 230 235 240

Gly Ala Glu Arg Gly Asn Arg Glu Pro Phe Leu Gln Ala Leu Gly Leu
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Leu Trp Phe Arg Tyr His Asn Leu Trp Ala Gln Arg Leu Ala Arg Gln
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His Pro Asp Trp Glu Asp Glu Glu Leu Phe Gln His Ala Arg Lys Arg
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Val Ile Ala Thr Tyr Gln Asn Ile Ala Val Tyr Glu Trp Leu Pro Ser
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Phe Leu Gln Lys Thr Leu Pro Glu Tyr Thr Gly Tyr Arg Pro Phe Leu
 305 310 315 320

Asp Pro Ser Ile Ser Pro Glu Phe Val Val Ala Ser Glu Gln Phe Phe
 325 330 335

Ser Thr Met Val Pro Pro Gly Val Tyr Met Arg Asn Ala Ser Cys His
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Phe Arg Lys Val Leu Asn Lys Gly Phe Gln Ser Ser Gln Ala Leu Arg
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Val Cys Asn Asn Tyr Trp Ile Arg Glu Asn Pro Asn Leu Asn Ser Thr
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Gln Glu Val Asn Glu Leu Leu Leu Gly Met Ala Ser Gln Ile Ser Glu
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Leu Glu Asp Asn Ile Val Val Glu Asp Leu Arg Asp Tyr Trp Pro Gly
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Pro Gly Lys Phe Ser Arg Thr Asp Tyr Val Ala Ser Ser Ile Gln Arg
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Gly Arg Asp Met Gly Leu Pro Ser Tyr Ser Gln Ala Leu Leu Ala Phe
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Gly Leu Asp Ile Pro Arg Asn Trp Ser Asp Leu Asn Pro Asn Val Asp
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Pro Gln Val Leu Glu Ala Thr Ala Ala Leu Tyr Asn Gln Asp Leu Ser
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Gln Leu Glu Leu Leu Gly Gly Leu Leu Glu Ser His Gly Asp Pro
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Gly Pro Leu Phe Ser Ala Ile Val Leu Asp Gln Phe Val Arg Leu Arg
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Asp Gly Asp Arg Tyr Trp Phe Glu Asn Thr Arg Asn Gly Leu Phe Ser
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Lys Lys Glu Ile Glu Asp Ile Arg Asn Thr Thr Leu Arg Asp Val Leu
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Val Ala Val Ile Asn Ile Asp Pro Ser Ala Leu Gln Pro Asn Val Phe
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Val Trp His Lys Gly Ala Pro Cys Pro Gln Pro Lys Gln Leu Thr Thr
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Asp Gly Leu Pro Gln Cys Ala Pro Leu Thr Val Leu Asp Phe Phe Glu
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Gly Ser Ser Pro Gly Phe Ala Ile Thr Ile Ile Ala Leu Cys Cys Leu
 595 600 605

Pro Leu Val Ser Leu Leu Leu Ser Gly Val Val Ala Tyr Phe Arg Gly
 610 615 620

Arg Glu His Lys Lys Leu Gln Lys Lys Leu Lys Glu Ser Val Lys Lys
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Glu Ala Ala Lys Asp Gly Val Pro Ala Met Glu Trp Pro Gly Pro Lys
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Glu Arg Ser Ser Pro Ile Ile Ile Gln Leu Leu Ser Asp Arg Cys Leu
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Gln Val Leu Asn Arg His Leu Thr Val Leu Arg Val Val Gln Leu Gln
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Pro Leu Gln Gln Val Asn Leu Ile Leu Ser Asn Asn Arg Gly Cys Arg
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Thr Leu Leu Leu Lys Ile Pro Lys Glu Tyr Asp Leu Val Leu Leu Phe
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Ser Ser Glu Glu Glu Arg Gly Ala Phe Val Gln Gln Leu Trp Asp Phe
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Cys Val Arg Trp Ala Leu Gly Leu His Val Ala Glu Met Ser Glu Lys
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Glu Leu Phe Arg Lys Ala Val Thr Lys Gln Gln Arg Glu Arg Ile Leu
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Leu Lys Pro Gln Asp Met Phe Val Glu Ser Met Phe Ser Leu Ala Asp
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Lys Asp Gly Asn Gly Tyr Leu Ser Phe Arg Glu Phe Leu Asp Ile Leu
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Val Val Phe Met Lys Gly Ser Pro Glu Asp Lys Ser Arg Leu Met Phe
 850 855 860

Thr Met Tyr Asp Leu Asp Glu Asn Gly Phe Leu Ser Lys Asp Glu Phe
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Phe Thr Met Met Arg Ser Phe Ile Glu Ile Ser Asn Asn Cys Leu Ser
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Lys Ala Gln Leu Ala Glu Val Val Glu Ser Met Phe Arg Glu Ser Gly
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Pro Gly Leu Lys Lys Arg Phe Gly Lys Lys Ala Ala Val Pro Thr Pro
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Leu Asn Arg Tyr Val Pro Phe Asp Ala Ala Val Asp Phe His Arg
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Trp Ile Ala Met Ala Ala Val Val Leu Ala Ile Leu His Ser Ala
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Gly His Ala Val Asn Val Tyr Ile Phe Ser Val Ser Pro Leu Ser
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Lys Leu Pro Gln Lys Phe Tyr Trp Trp Phe Phe Gln Thr Val Pro
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Gly Met Thr Gly Val Leu Leu Leu Leu Val Leu Ala Ile Met Tyr
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Val Phe Ala Ser His His Phe Arg Arg Arg Ser Phe Arg Gly Phe
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Trp Leu Thr His His Leu Tyr Ile Leu Leu Tyr Ala Leu Leu Ile
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Ile His Gly Ser Tyr Ala Leu Ile Gln Leu Pro Thr Phe His Ile
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Tyr Phe Leu Val Pro Ala Ile Ile Tyr Gly Gly Asp Lys Leu Val
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Ser Leu Ser Arg Lys Lys Val Glu Ile Ser Val Val Lys Ala Glu
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Ile Tyr Phe Ile Trp Val Thr Arg Thr Gln Arg Gln Phe Glu Trp
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Asp Leu Arg Thr Thr Met Leu Tyr Ile Cys Glu Arg His Phe Gln
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Lys Val Leu Asn Arg Ser Leu Phe Thr Gly Leu Arg Ser Ile Thr
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His Phe Gly Arg Pro Pro Phe Glu Pro Phe Phe Asn Ser Leu Gln
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Glu Val His Pro Gln Val Arg Lys Ile Gly Val Phe Ser Cys Gly
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